# Appendix Q

## Northgate to Lynnwood Light Rail and I-5 Compatibility Report

## North Corridor Transit Project

# Northgate to Lynnwood Light Rail and I-5 Compatibility Report

Prepared For:

Washington State Department of Transportation

SOUND TRANSIT

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# Acronyms and Abbreviations

| | |
|---|---|
| DEIS | Draft Environmental Impact Statement |
| ETLs | express toll lanes |
| FTA | Federal Transit Administration |
| HOV | high-occupancy vehicle |
| HSR | Hard Shoulder Running |
| I-5 | Interstate 5 |
| ITS | Intelligent Transportation Systems |
| Link | Link light rail system |
| LRT | Light Rail Transit |
| NCTP | North Corridor Transit Project |
| Sound Transit | Central Puget Sound Regional Transit Authority |
| SR | State Route |
| WSDOT | Washington State Department of Transportation |

# 1 INTRODUCTION

## 1.1 Background

Sound Transit is preparing to extend mass transit from Northgate to Lynnwood, which voters approved as part of the Sound Transit 2 Plan in 2008, along with funding to continue planning future service all the way to Everett. The project, called the North Corridor Transit Project (NCTP), will connect to and build on the Link light rail line that opened for service between downtown Seattle and Sea-Tac Airport in 2009.

Sound Transit has just completed an Alternative Analysis (AA) in compliance with Federal Transit Administration guidelines for New Starts grant funding. The AA, entitled the "NCTP Alternatives Analysis Report and SEPA Addendum" (Sept 2011), evaluated a range of potential alternatives for addressing mobility needs within the Project area, including transit modes, routes, stations, and operating features.

The AA concluded that light rail was the only mode that can satisfy the NCTP's Purpose and Need related to transportation effectiveness in meeting the corridor's mobility, access, and capacity needs, as well as consistency with Sound Transit's Long-Range Plan. Interstate 5 (I-5) was one of the corridors evaluated by the AA for light rail service. The proposed I-5 alternative is shown in Figure 1.

The next step for the project is to begin the conceptual design and environmental review activities associated with the NEPA/SEPA Draft Environmental Impact Statement (DEIS). This process will more closely define the footprint requirements for light rail infrastructure and will identify potential impacts associated with alternative alignments.

## 1.2 Purpose of Report

This report was prepared by North Corridor Transit Partners for the Washington State Department of Transportation (WSDOT) and Sound Transit (Central Puget Sound Regional Transit Authority). This report documents WSDOT and Sound Transit's agreement on reasonable I-5 highway and light rail areas that will ensure WSDOT's ability to make future highway improvements while accommodating light rail infrastructure and minimizing impacts to adjacent properties. This report documents WSDOT's and Sound Transit's assumptions for beginning the design process of light rail alternatives along I-5.

## 1.3 Approach

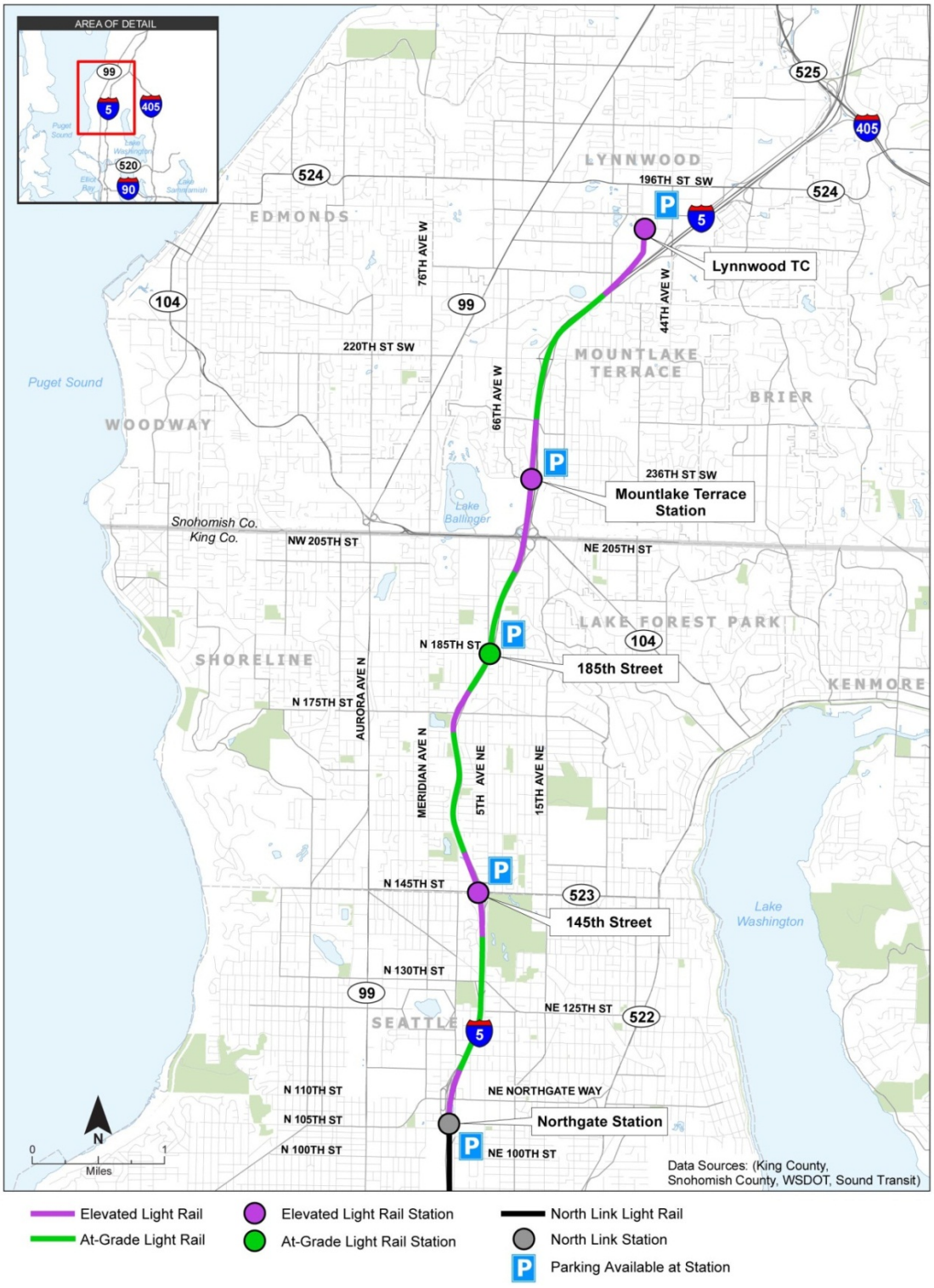
The analysis for this report takes into account previous studies prepared by WSDOT and Sound Transit. WSDOT studies include the I-5 Pavement Replacement Project and the Express Toll Lanes Study. The Pavement Reconstruction Project (Existing Pavement Conditions and Traffic Operations Analysis Results Report, November 2007) identified several operational improvements that included creating four continuous lanes between the Washington Ship Canal Bridge and the northern terminus of the express lanes. The Express Toll Lanes Study, currently in progress, is analyzing the conversion of the existing HOV lane and possible addition of a new lane north of the express lanes that could be available for a tolled lane system.

The Sound Transit Alternatives Analysis Report (September 2011) for the light rail extension from Northgate to Lynnwood identifies the east side of I-5 up to SW 236th Street and the median from SW 236th Street to Lynnwood as a likely location for light rail. For that reason, this report is limited to reviewing the northbound (east side) portion of I-5. This report could be amended in the future if an analysis of the southbound portion of I-5 is determined necessary. Additional details will be developed during the DEIS process to further define issues that are beyond the scope of this report's analysis.

WSDOT's I-5 highway requirements for the I-5 right-of-way include the need for space adjacent to the existing travel lanes to maintain the flexibility for future improvements to the highway infrastructure such as improving safety, upgrading environmental conditions, improving highway technology (ITS), and/or adding capacity.

Sound Transit's needs for light rail include providing adequate space for the rail guideway infrastructure for each direction of travel, a pedestrian walkway, poles to support the overhead catenary system, signal systems, bridge railing, noise walls, and retaining walls. For the NCTP DEIS analysis, the light rail footprint will be located outside of the highway area. The DEIS will evaluate the width and location requirements of the proposed rail alignments, including construction impacts outside of the highway area.

The concepts presented in the following analysis identify a range of possible improvements that support WSDOT's and Sound Transit's interests and do not represent a specific approved or proposed project. These concepts provide a basis to identify a reasonable space allocation that will be flexible for WSDOT to make future highway improvements that would not require relocation of the light rail infrastructure.




*Depicted is one of several alternative concepts for light rail service on the I-5 corridor, additional alignment and station alternatives will be considered in the DEIS, but those have not been defined in detail at this time.*

**Figure 1. NCTP Conceptual I-5 Corridor for Light Rail Service**

# 2 EXISTING ROADWAY CONDITIONS

In addition to the existing mainline general purpose lanes, HOV lanes and interchanges, the I-5 corridor includes infrastructure to support traffic operations, bus operations, safety and environmental requirements.

Within the corridor, infrastructure to support buses includes outside freeway stops and a park-and-ride lot at NE 145th Street, a transit only interchange to King County Metro's North Base, a transit only median freeway station at Mountlake Terrace, and an HOV median direct access ramp system in Lynnwood. Transit also benefits from the high-occupancy vehicle (HOV) lanes located throughout the I-5 corridor. Figure 2 illustrates the existing lane and ramp configuration of I-5 from Northgate to Lynnwood.

Additional highway infrastructure supports safety and operations along the corridor. This infrastructure includes barriers, guardrails, retaining walls, noise walls, drainage piping systems, stormwater treatment and detention, signs, illumination, and intelligent transportation systems (ITS). ITS includes features such as traffic cameras, vehicle data collectors, variable message signs, ramp meters and signals and fiber optic cables, as well as associated electrical cabinets and junction boxes. Landscaping and natural vegetation buffers, although not a specific highway function, are typically important features to communities to provide separation between the highway lanes and the private properties. All of these features occupy additional space beyond the edge of pavement to provide the existing and future functions.

Existing features also use some of the space within the existing right of way. At several locations, local streets were constructed within the I-5 right of way or are located adjacent to the right of way. The terrain has constant variation throughout the project limits and in many cases these slopes and retaining walls take up much of the space between the existing highway pavement and the edge of the I-5 right-of-way.

Existing right-of-way varies along the entire length of this corridor. The greatest variability occurs through the interchanges where additional width is required for the ramps. Between ramps, there is also variability due to the original property boundary lines that existed prior to construction of I-5 and the land purchases that were negotiated to create the I-5 right-of-way. As a result, the right-of-way width is rarely constant along this project corridor. To summarize the right-of-way widths, Table 1 describes the variability in the right-of-way width along mainline I-5 measured approximately from the existing center barrier to the eastern edge of the right-of-way, The data in Table 1 is segmented from one interchange to the next, but does not include the additional width at each interchange to accommodate ramps.

**Table 1*. Existing I-5 Northbound Roadway Right-of-Way**

| Segment | Eastern Half ROW width |
|---|---|
| Northgate Way to 130th | 125-220 feet |
| 130th to 145th | 215-220 feet |
| 145th to North Base | 125-150 feet |
| North Base to 175th | 120-185 feet |
| 175th to 205th (County Line) | 135-220 feet |
| 205th to 236th | 185-350 feet |
| 236th to 220th | 125-320 feet |
| 220th to 44th | 130-210 feet |

*The data in Table 1 is segmented from one interchange to the next, and does not include the additional width required at each interchange to accommodate ramps.

# 3 FUTURE ROADWAY NEEDS

## 3.1 Maintaining Flexibility for Future Decisions

WSDOT has studied a number of possible modifications to the I-5 corridor between Northgate and Lynnwood but has not adopted specific plans for improvements. As noted previously, space within the I-5 right-of-way and adjacent to the existing travel lanes needs to be reserved to maintain the flexibility for future improvements to the highway infrastructure such as improving safety, upgrading environmental conditions, improving highway technology (ITS), or adding capacity. These improvements could include the following:

- Upgrade existing shoulders and maintain existing 12-foot lanes to meet current design standards,
- Create additional capacity by adding lanes,
- Modify interchanges,
- Upgrade ITS systems (variable speed limits, cameras, tolls, illumination, etc.),
- Update drainage infrastructure to meet current or future stormwater standards,
- Provide additional noise mitigation, and
- Provide additional landscaping buffers and enhancements.

The highway area is based on the ability to add one extra lane from the express lane ramps at Northgate to I-405. The additional lane could be added as an additional general purpose lane, an HOV lane, or as a hard shoulder running lane. Figure 2 shows the existing lane configuration and the future concept of how one additional lane could be added to the corridor. Lane continuity (providing continuous lanes for as long as possible) was also a factor in developing the future concept and as a result the future lane concept includes two additional lanes at the 175$^{th}$ interchange. In summary, the future concept could have six continuous lanes between the north end of the express lanes and the county line at the 205th Street interchange, then five continuous lanes north of the county line.

## 3.2 Northbound Roadway Cross Sections

Space allocations for potential roadway modifications were evaluated using a series of cross sections for variable quantity of lanes and widths of lanes. Figure 3 shows the existing cross section and four potential options for widening the cross section with additional lanes or widened shoulders. Each option shows the same 84-foot total width cross section, the variability of the lane, shoulder, and buffer widths and the resulting quantity of lanes possible for each option. The table on the right side of the figure shows the total cross section width as a result of varying the quantity of lanes. The four options studied are as follows:

- Option 1- 7 lanes: Minimum widths for lanes and shoulders.

- Option 2 – 6 lanes: Hard Shoulder Running (HSR) option with larger left shoulder and a peak period HSR lane on the right shoulder.
- Option 3 – 6 lanes: Dual Express Lane option with narrower left shoulder and full right shoulder, and narrower lanes.
- Option 4 – 5 lanes: Full Standards option that includes the maximum lane, shoulder, and buffer widths.

Since specific future freeway improvements have not been identified, it is important to define a pavement envelope that will provide reasonable flexibility for a variety of future options. After careful review and analysis of a variety of cross-section options, WSDOT and Sound Transit concluded that a pavement width of 84 feet from the center barrier to the edge of the roadway will provide the desired flexibility. This width allows for future lane configurations that could range between five and seven lanes. With the exception of areas around the freeway interchanges, an 84-foot pavement width for mainline lanes is adequate to provide the desired flexibility along the entire length of the North Corridor Transit Project.

Additional space outside of the pavement may be required for other safety, environmental, and technology highway elements. Space beyond the pavement is required for barriers or guardrails, signs, illumination, ITS infrastructure, fencing, and retaining walls. In general, a 10-foot width on the outside edge of the mainline is recommended for these elements. Where light rail might be located in the median of I-5, specific elements would need to be designed into the light rail infrastructure, which could include barriers, walls, drainage collection, and structure support columns. At isolated locations, the 10-foot space could be reduced or a light rail guideway column could be located within this area if additional design studies provide documentation that the space is not required for highway uses.

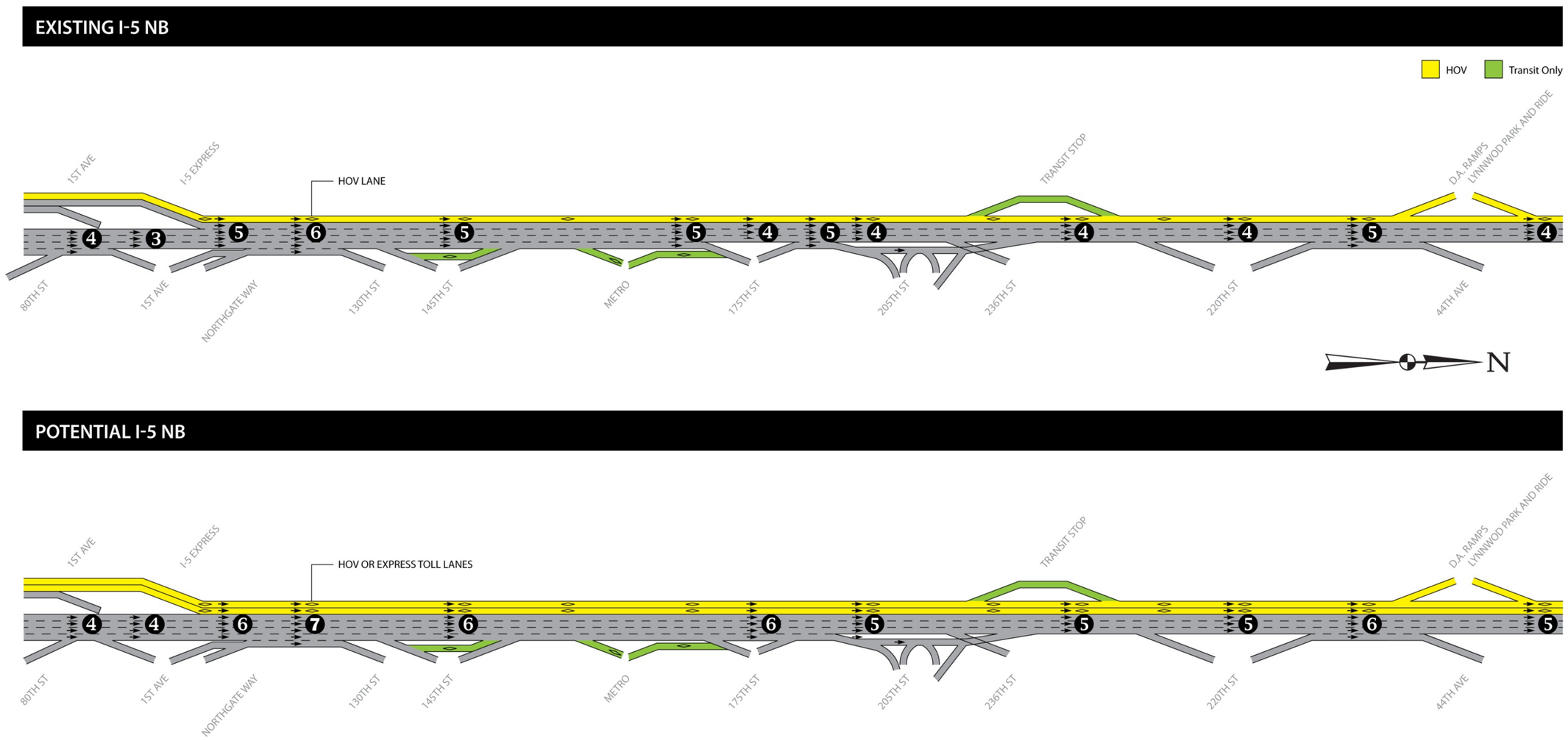



**Figure 2. Existing and Potential Future I-5 Northbound Lane Schematics**

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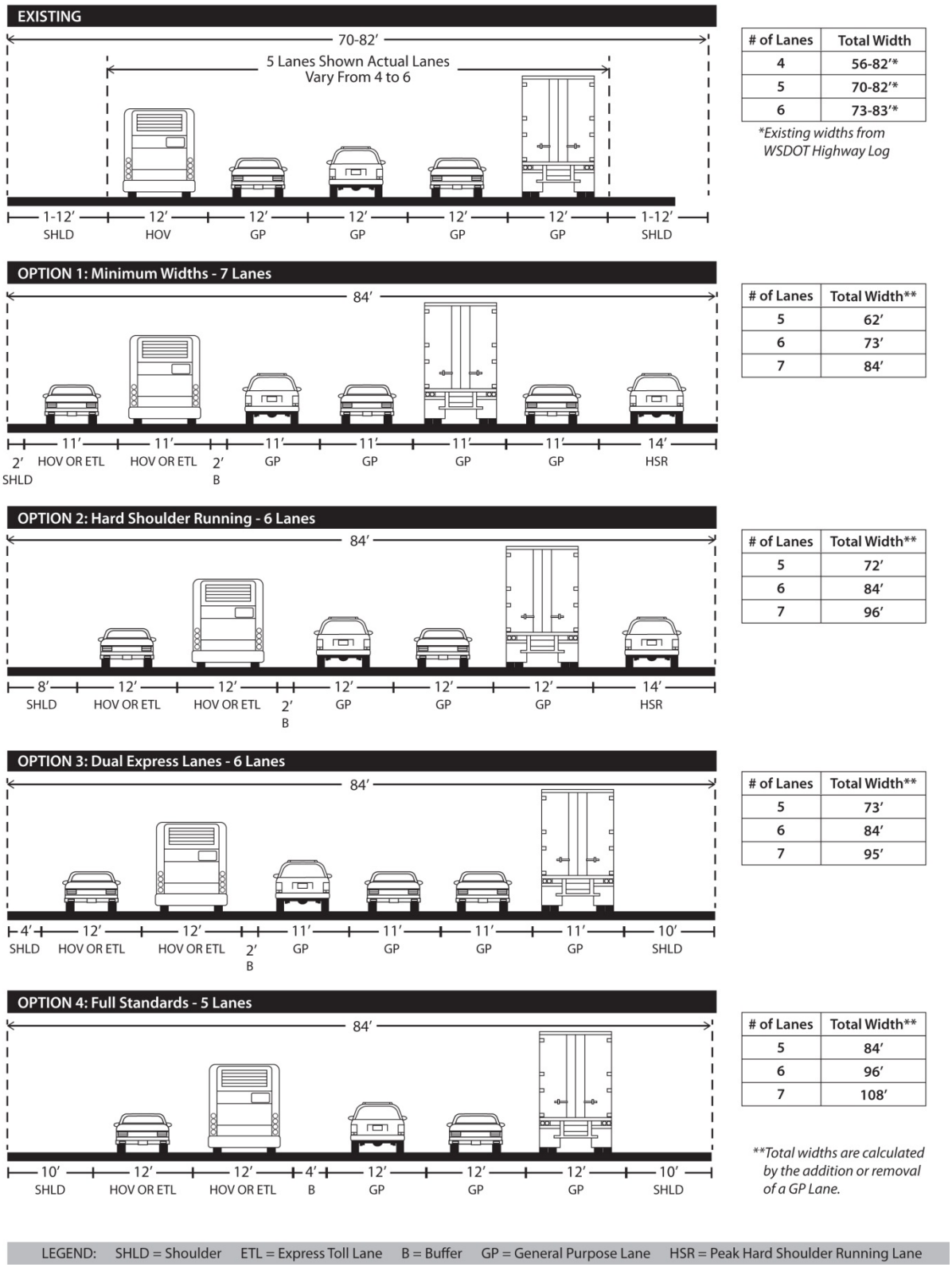



| # of Lanes | Total Width |
|---|---|
| 4 | 56-82′* |
| 5 | 70-82′* |
| 6 | 73-83′* |

*Existing widths from WSDOT Highway Log

| # of Lanes | Total Width** |
|---|---|
| 5 | 62′ |
| 6 | 73′ |
| 7 | 84′ |

| # of Lanes | Total Width** |
|---|---|
| 5 | 72′ |
| 6 | 84′ |
| 7 | 96′ |

| # of Lanes | Total Width** |
|---|---|
| 5 | 73′ |
| 6 | 84′ |
| 7 | 95′ |

| # of Lanes | Total Width** |
|---|---|
| 5 | 84′ |
| 6 | 96′ |
| 7 | 108′ |

**Total widths are calculated by the addition or removal of a GP Lane.

**Figure 3. Future Potential Northbound I-5 Roadway Cross Sections**

## 3.3 Interchanges

While an 84-foot roadway width between interchanges is adequate to maintain WSDOT's flexibility to make a range of future freeway improvements, each interchange between Northgate and Lynnwood needs to be evaluated individually to determine the highway area needed for potential mainline lane additions and for potential modifications to the interchange ramps. To accommodate mainline lane additions, further evaluation of the tapers and gore areas is required to define how existing interchanges could be connected to the wider mainline. This area is variable for each ramp at each interchange. WSDOT and Sound Transit will continue to define the space allocation for the I-5 ramps.

At each interchange, space should be preserved for cross-street widening that could include bicycle and pedestrian improvements and safety elements such as clear zone and sight distance. In general along this corridor, interchange ramp terminals are separated from the mainline by slopes and vegetation. If mainline lanes are widened, it is assumed that the widening would occur within the vegetated area and interchange ramp terminals would not be affected. WSDOT may undertake interchange modifications in the future at NE 130th and NE 145th Streets but a specific configuration has not been determined at this time. WSDOT and Sound Transit will work together during Sound Transit's North Corridor Transit Project DEIS process to further define thehighway area at these two interchanges or define the modifications needed as a result of impacts from the light rail project. Where ramps are parallel and adjacent to mainline lanes, the reservation area includes space for relocation of the ramps outside the northbound mainline 84-foot width.

Each interchange has been reviewed to identify potential issues that could require modifications and therefore require a reservation for improvements. Each interchange is outlined in the sections that follow with a list of issues that could be considered at each interchange.

### 3.3.1 NE Northgate Way Interchange

- Southbound collector/distributor ramp weaving and capacity issues may be addressed in the future by WSDOT. The southbound ramp is outside the assumed alignment for light rail.
- Preserve the ability to enhance existing pedestrian and bicycle treatments along the local street.

**Figure 4. Northgate Way Interchange**

### 3.3.2 NE 130th Street Interchange

- Northbound ramp intersection configuration at 5th Avenue is not a typical interchange layout and could be considered for eventual modification by WSDOT.
- Roosevelt Way/130th Street/5th Avenue intersection configuration does not meet current standards for intersection alignments due to the curve on the east leg of the intersection.
- Preserve the ability to enhance existing pedestrian and bicycle treatments along the local street.
- Completing the interchange by adding southbound off and northbound on ramps is not under consideration.

**Figure 5. NE 130th Street Interchange**

### 3.3.3 NE 145th Street Interchange

- Northbound ramp intersection configuration at 5th Avenue is not a typical interchange layout and could be considered for modifications.
- 145th Street/5th Avenue intersection capacity should be evaluated with the addition of a light rail station and park and ride. Intersection modifications may be necessary to improve the capacity for the potential increase in traffic.
- Preserve the ability to enhance existing pedestrian and bicycle treatments along the local street.
- Existing bus transit freeway stops will be removed once light rail service is in operation.
- WSDOT may consider adding HOV/ETL direct access ramps within this interchange.

**Figure 6. NE 145th Street Interchange**

### 3.3.4 Metro North Base Interchange

- No future changes identified.

**Figure 7. Metro North Base interchange**

### 3.3.5 NE 175th Street Interchange

- Preserve the ability to enhance existing pedestrian and bicycle treatments along the local street.

**Figure 8. NE 175th Street Interchange**

### 3.3.6 SR 104 (NE 205th Street) Interchange

- Preservation of open space for potential stormwater or wetland mitigation is desirable.
- WSDOT may consider adding HOV/ETL direct access ramps within this interchange.

**Figure 9. SR 104 (NE 205th Street) Interchange**

### 3.3.7 236th Street SW Interchange

- Preserve the ability to enhance existing pedestrian and bicycle treatments along the local street.
- Completion of interchange by adding southbound off and northbound on ramps is not under consideration.

**Figure 10. 236th Street SW Interchange**

### 3.3.8 220th Street SW Interchange

- Potential for intersection widening to improve the intersection level of service.
- Potential addition of southbound mainline auxiliary lane between 44th and 220th Streets.

**Figure 11. 220th Street SW interchange**

### 3.3.9 Lynnwood Transit Center Direct Access Ramp/44th Avenue W Interchange

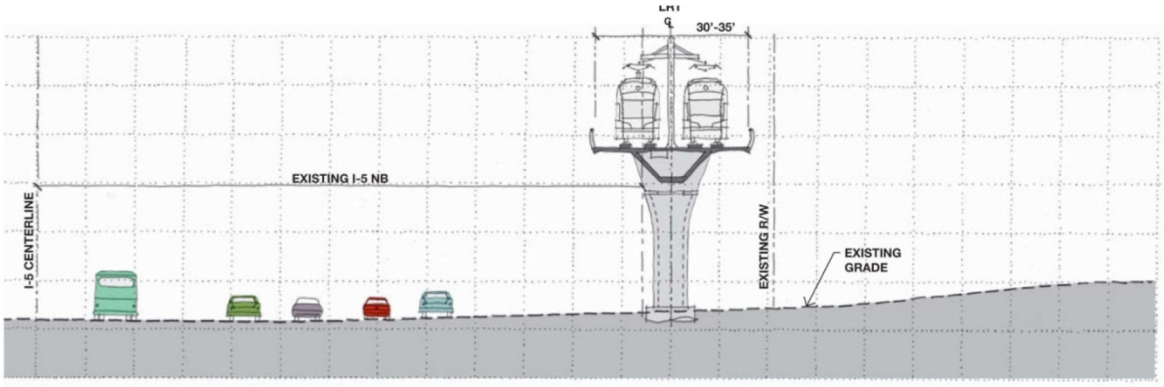
- Southbound on-ramp from 44th Avenue W is configured for high vehicle speeds and makes non-motorized travel through the intersection along the south side of 44th difficult. Modified intersection geometry could be considered by WSDOT.

**Figure 12. 44th Avenue W Interchange and Lynnwood Transit Center Direct Access Ramp**

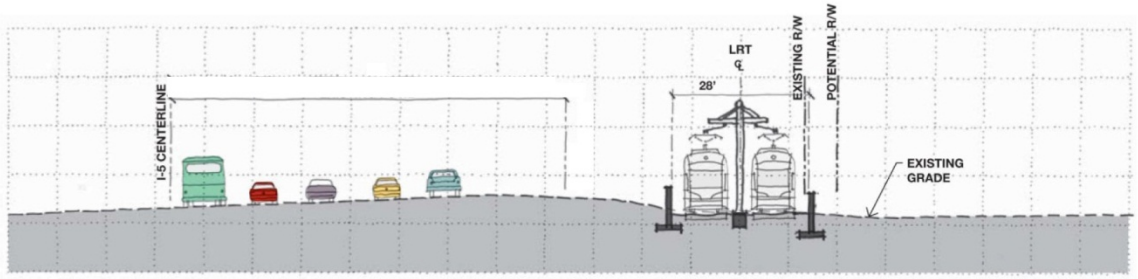
# 4 LIGHT RAIL AREA

Light rail will extend from the planned Northgate Link light rail station to the existing Transit Center in Lynnwood. Sound Transit's recent North Corridor alternatives analysis process identified the east side of I-5, from Northgate to SW 236th Street in Snohomish County and then the median from SW 236th Street to the Lynnwood Transit Center as a promising general location for a light rail alignment. Additional alignment and station alternatives will be considered in the DEIS, but those have not been defined in detail at this time.

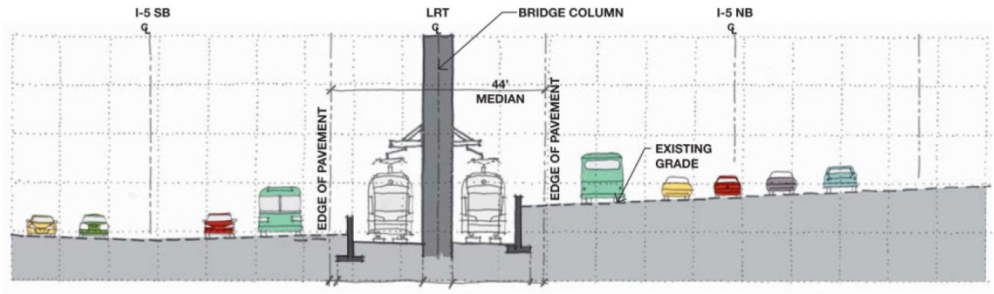
Critical space elements for the light rail include the rail guideway infrastructure for each direction of travel, a pedestrian walkway along the guideway for emergency and maintenance use, poles to support the overhead catenary system, signal systems, drainage systems, bridge railing, noise walls, and retaining walls. Widths to accommodate these elements range between 28 and 35 feet, except in the median of I-5 up to 44-feet may be needed where columns support structures over I-5. Figure 13 illustrates potential cross-section configurations for light rail along the I-5 corridor. In many locations additional space may be required for light rail retaining walls, fencing, noise walls, or relocating freeway infrastructure. The light rail alignment cannot always be located parallel to the edge of the highway due to light rail geometric requirements or other design conflicts; therefore there could be additional space between the highway area and the light rail area. Existing highway noise walls may also need to be relocated nearer the right-of-way line to provide noise abatement for both light rail and highway noises.




TYPICAL CROSS-SECTION OF ELEVATED RAIL ON EAST SIDE OF ROADWAY




TYPICAL CROSS-SECTION OF AT-GRADE RAIL ON EAST SIDE OF ROADWAY




TYPICAL CROSS-SECTION OF AT-GRADE RAIL IN MEDIAN OF ROADWAY

The light rail alignment cannot always be located parallel to the edge of the highway due to light rail geometric requirements; therefore there could be additional space between the WSDOT pavement reservation and the light rail reservation.

**Figure 13. Typical Light Rail Cross Sections**

# 5 CONCLUSIONS AND NEXT STEPS

The next step for the North Corridor Transit Project is to begin the conceptual design activities associated with the NEPA/SEPA Draft Environmental Impact Statement (DEIS). This process will more closely define the footprint of the light rail infrastructure and the identification of impacts associated with the project. The footprint will be developed to preserve space for future modifications of I-5 and will provide the I-5 areas described above. In summary, the assumptions that WSDOT and Sound Transit have agreed to are as follows and as shown in Figure 14:

- For the mainline I-5 northbound roadway, provide 84 feet pavement area for future pavement width from center barrier to the edge of I-5 mainline.
- North of 236th Street SW, where I-5 includes a median between the northbound and southbound roadways, sufficient right of way exists to provide the 84 foot pavement area on the outside of the existing highway without encroaching into the median. For this segment, it is contemplated that the light rail infrastructure would be built in the median of I-5.
- Provide an additional 10 feet beyond the outside edge of the roadway to accommodate barriers, ITS, signals, etc. This area could potentially be used for light rail guideway columns.
- Interchange gore area needed to support an additional lane should be defined during the DEIS design development process.
- Additional modifications may be considered by WSDOT and Sound Transit during the DEIS design development. The following locations are currently identified for additional design coordination:
    - 117th/1st Avenue NE
    - 130th interchange
    - 145th interchange
    - Lynnwood Transit Center (direct access and 44th on-ramp vicinity)
- Cross-street improvements may also occur in the future and therefore LRT guideway columns, abutments, etc. should be located away from the existing edge of streets. Specific structure locations will be defined during the final design phase and coordinated with the appropriate jurisdiction.
- Light Rail will be placed outside the minimum highway area and the specific location will vary based on meeting the Sound Transit Design Criteria Manual and project needs.

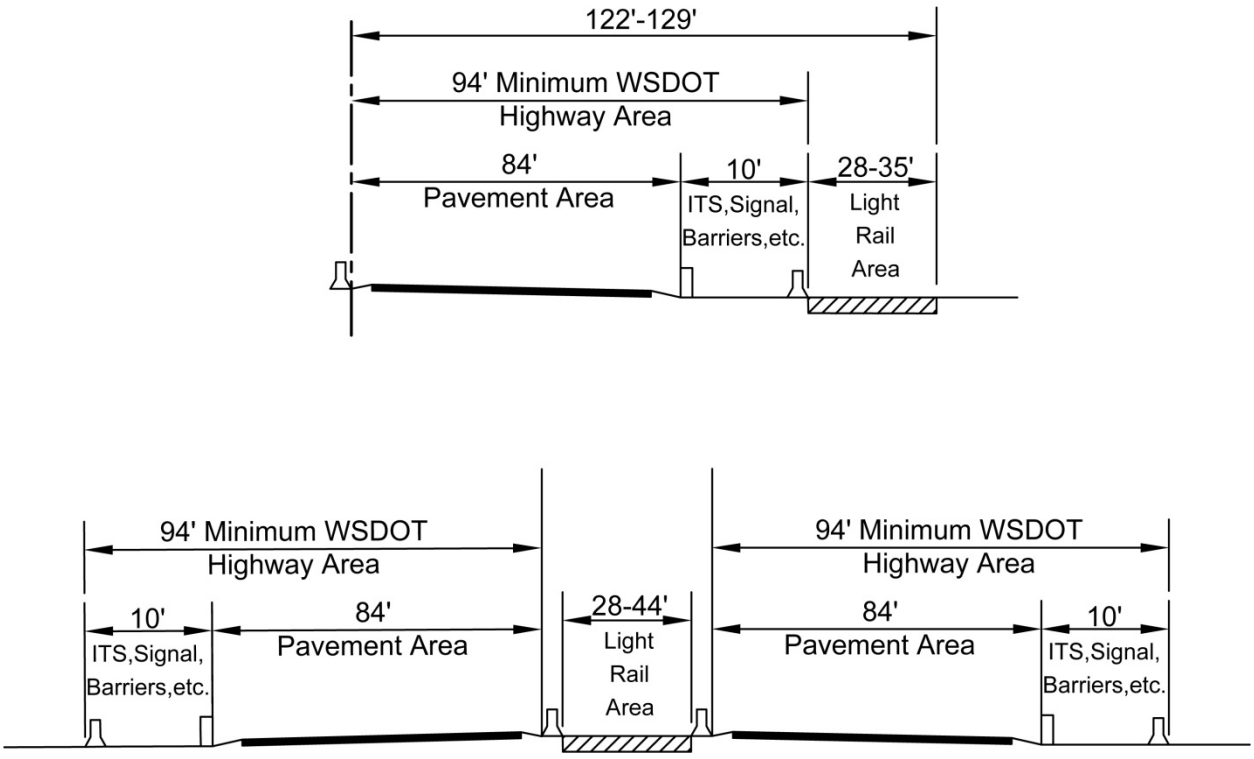



**Figure 14. Minimum Highway and Light Rail Areas**

# Appendix R

## Link Operations and Maintenance Satellite Facility Analysis

# APPENDIX R – LINK OPERATIONS AND MAINTENANCE SATELLITE FACILITY ANALYSIS

As described in Chapter 2, Sound Transit plans to construct and operate a Link Operations and Maintenance Satellite Facility (OMSF) to support light rail operations and maintenance needs for the ST2 program of projects across the Sound Transit district. Sound Transit and FTA issued a separate NEPA/SEPA Draft EIS for this facility in May 2014 and are now preparing its Final EIS. The new OMSF would operate in conjunction with Sound Transit's existing Forest Street Operations and Maintenance Facility (OMF) in Seattle to support the 80 additional light rail vehicles required for ST2's expanded system.

The OMSF Draft EIS evaluated one alternative in Lynnwood and three alternatives in Bellevue (see Figure R-1):

**Lynnwood Alternative**—This alternative is north of I-5, west of the Lynnwood Transit Center, and east of 52nd Avenue West/Cedar Valley Road, with additional light rail storage tracks, operator report facilities, and interior cleaning functions in Bellevue north of NE 12th Street and south of SR 520.

**BNSF Alternative**—This alternative is located in Bellevue between the Eastside Rail Corridor on the west and 120th Avenue NE on the east, south of SR 520 and north of NE 12th Street.

**BNSF Modified Alternative**—This alternative would be in the same location as the BNSF Alternative, but it would construct the OMSF on both sides of the Eastside Rail Corridor west of 120th Avenue NE.

**SR 520 Alternative**—This alternative would be constructed south of SR 520 and north of Northup Way/NE 20th Street, east of 130th Avenue NE and west of 140th Avenue NE.

On July 24, 2014, the Sound Transit Board identified the BNSF Alternative as the Preferred Alternative for evaluation in the final EIS along with other alternatives (Motion M2014-51). A final decision on the OMSF site will be made after publication of the project's Final EIS, expected in summer 2015. Table R-1 summarizes the potential impacts of the OMSF build alternatives.

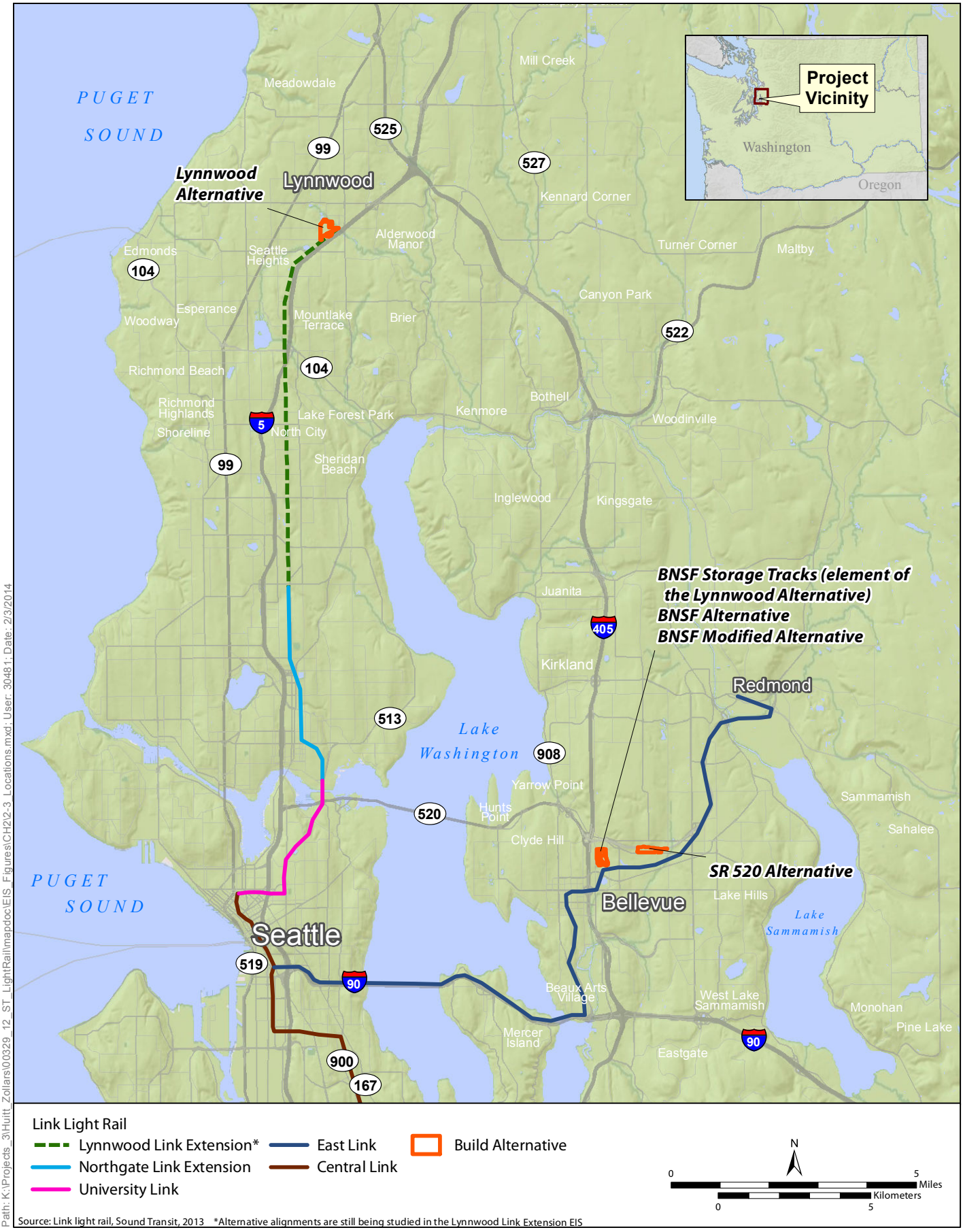



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**Figure R-1**
Locations of the Build Alternatives
Sound Transit Link Light Rail
OMSF Draft EIS

**Table R-1. Differentiating Characteristics and Impacts of the OMSF Build Alternatives**

| Differentiating Characteristic | Lynnwood Alternative | BNSF Alternative | BNSF Modified Alternative | SR 520 Alternative |
|---|---|---|---|---|
| **Operations** | | | | |
| Requires off-site storage tracks | Yes | No | No | No |
| **Acquisitions, Displacements, and Relocations** | | | | |
| Number of parcels acquired | 14–15 | 6 | 14 | 13 |
| Number of existing land uses displaced | 11–14 | 14 | 25 | 101 |
| **Land Use** | | | | |
| Consistent with zoning/comprehensive plan designations | No; would require comp. plan and zoning change and a conditional use permit. | No; would require a conditional use permit. | No; would require a conditional use permit. | No; would require a conditional use permit. |
| Surplus land available for redevelopment | 9–13 acres | 4 acres | 8 acres | 0 acres |
| **Economics** | | | | |
| Loss of annual property tax revenue (2012) | $413,100–$450,400 | $464,200 | $572,400 | $630,500 |
| **Noise and Vibration** | | | | |
| Affected sensitive receptors and adjacent land uses (number after mitigation) | 2 homes (None) | None | None | None |
| **Ecosystems and Water Resources** | | | | |
| Aquatic impacts | ≤ 0.1 acre of stream buffer | 0 acres of stream buffer | 0 acres of stream buffer | Piping approx. 700 feet of Goff Creek and 0.64 acre of stream buffer |
| Vegetation and wildlife impacts (vegetation removal) | 11–12 acres | 3 acres | 6 acres | 2 acres |
| Wetland impacts (direct) | 1.98–2.18 acres | 0.07 acre | 0.6 acre | 0.39 acre |
| Wetland buffer impacts | 1.79 acres | 0.25 acre | 1.33 acres | 0.29 acre |
| Groundwater and stream baseflow impacts | No | No | No | Yes |
| **Public Services** | | | | |
| Number of direct impacts on essential public facilities | 1 | 0 | 1 | 0 |
| **Parkland and Open Space** | | | | |
| Number of temporary impacts on park resources | 1 | 0 | 0 | 0 |

Link Light Rail Operations and Maintenance Satellite Facility Draft Environmental Impact Statement, May 2014

This Lynnwood Link Extension EIS analysis assumes the OMSF along with other ST2 projects as part of the No Build and all build alternatives. Even if the Lynnwood Link Extension does not go forward, Sound Transit will construct the OMSF to accommodate other elements of the ST2 Plan.

Sound Transit does not require the OMSF in order to build and operate the Lynnwood Link Extension, although the OMSF is needed to operate Lynnwood Link at the level of light rail service assumed for the ST2 program. If the OMSF is delayed or not constructed, Link operation and maintenance would occur exclusively at the Forest Street OMF. Therefore, Lynnwood Link Extension and the Link OMSF are related but have independent utility under NEPA and SEPA.

However, Lynnwood Link Extension service levels without the OMSF would be substantially lower than if the OMSF were constructed. During peak periods, the OMSF will enable four-car trains at 4-minute headways between the Lynnwood Transit Center and International District Station in Seattle. Without the OMSF, the Lynnwood Link Extension would run three-car trains and have longer peak-hour headways, reducing passenger capacity by more than 40 percent. Table R-2 compares potential effects of the Lynnwood Link Extension project with the service levels assumed in No Build and light rail alternatives as analyzed in the Lynnwood Link Extension EIS with potential impacts at reduced service levels without the OMSF.

**Table R-2. Comparison of Potential Effects of Lynnwood Link Extension Without OMSF**

| Effect | | Comparative Impacts with Reduced Capacity/No OMSF |
|---|---|---|
| Ridership | | Reduced ridership due to reduced capacity and overcrowding. |
| Transportation | Number of intersections requiring mitigation | Same or fewer due to reduced ridership. |
| | I-5 congestion | Increased congestion. |
| | I-5 bridges rebuilt | Similar, project facilities would be unchanged. |
| | I-5 ramps relocated | Similar, project facilities would be unchanged. |
| | Realigned streets | Similar, project facilities would be unchanged. |
| | Number of parking spaces removed | Similar, project facilities would be unchanged. |
| Acquisitions, Displacements and Relocations | | Similar, project facilities would be unchanged. |
| Land Use | | Similar, project facilities would be unchanged. |
| Economics | | Similar, project facilities would be unchanged. |
| Social Impacts, Community Facilities, and Neighborhoods | | Similar, project facilities would be unchanged. |
| Visual and Aesthetic Resources | | Similar, project facilities would be unchanged. |

**Table R-2. Comparison of Potential Effects of Lynnwood Link Extension Without OMSF**

| Effect | Comparative Impacts with Reduced Capacity/No OMSF |
|---|---|
| Air Quality and Greenhouse Gases | Predicted reduction in VMT would be less, resulting in less air quality benefit. Construction impact would be the same as project facilities would be unchanged. |
| Noise and Vibration | Slightly reduced due to fewer and shorter train pass-bys. |
| Ecosystem Resources | Similar, project facilities would be unchanged. |
| Water Resources | Similar, project facilities would be unchanged. |
| Energy | Reduction in energy consumption for travel would be less due to a smaller reduction in VMT. |
| Geology and Soils | Similar, project facilities would be unchanged. |
| Hazardous Materials | Similar, project facilities would be unchanged. |
| Electromagnetic Fields | Negligible reduction due to fewer train pass-bys. |
| Public Services, Safety and Security | Similar because project facilities would be unchanged. Fewer passengers could reduce potential for accidents. |
| Utilities | Similar, project facilities would be unchanged. Electricity demand to power the system would be reduced. |
| Cultural Resources | Similar, project facilities would be unchanged. |
| Parks and Recreational Resources | Similar, project facilities would be unchanged. |